

## ABSTRACT

An apparatus and method for analyzing the performance of a system having at least one rotating member therein are disclosed. Light is directed from a light source to intercept an encoded portion of the rotating member. A portion of the light is transmitted from the encoded portion of the rotating member. The transmitted portion of the light can be then detected to recover performance information maintained therein, wherein the performance information contains performance characteristics of the system. A mechanism for transmitting a portion of the light from the encoded portion of the rotating member is also provided. A diffracted portion of the light can be detected to recover performance information. The light source can be configured as a vertical cavity surface emitting laser (VCSEL). The encoded portion of rotating members thereof may comprise a dual layer bar code. Images from a first encoded surface may interact with an image from a second encoded surface after the light beam is transmitted through the second rotating surface to produce Moirè fringes.

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